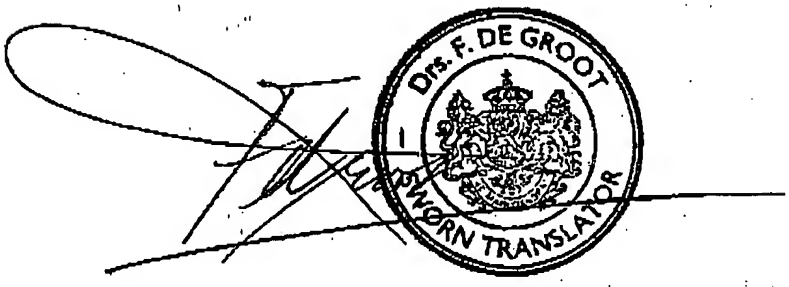
CERTIFICATION

I, drs. F. de Groot, a sworn translator of Dutch nationality,
of J. Boezerstraat 83, 2552 DL DEN HAAG, the Netherlands,
do hereby declare that, to the best of my knowledge and belief, the
attached translation verified by me is a true and accurate
translation of French patent specification FR 474 476.

Signed this 28th day of November 2005



CMJ/MBX P53221US00

-translation of French patent 474476-

Improved check valve

The present invention relates to an improved check valve particularly intended to be arranged in the pipe that connects a steam pump to a steam kettle and is also suitable for other uses. The object of the invention is a check valve whose stroke is prevented when the pump runs at full speed. Further objects of the invention are improvements to the construction of the parts of the check valve, improvements due to which the assembly and disassembly of the valve are simplified and manufacture can take place at minimal costs.

The accompanying drawing represents, by way of example, an embodiment of the object of the invention.

Fig. 1 is a longitudinal cross-section along the axis of the check valve;

Fig. 2 is a transversal cross-section along the line a-a of Fig. 1;

As shown in the Figure, the housing 1 of the check valve is cylindrical and is provided on one extremity with a reducer 2 with an opening provided with screw thread 3, allowing connection to the pipe 4 which leads to the kettle or any analogous apparatus. The other extremity of the housing 1 is provided with a portion with a slightly reduced diameter 5, provided with an external screw thread 6 forming an annular support 7. The heart 8 of the housing 1 is provided with a cylindrical part 9, arranged concentrically to the wall of the housing and at a particular distance therefrom, the cylinder being closed at the extremity 10 opposite the steam pipe and open at the opposite extremity 11, which is provided with a screw thread 12. In practice, it is preferred that the housing, its heart and the internal cylinder are poured in one piece. A pipe 13 connects the closed heart 10 of the cylinder to the wall 1 of the housing, while said pipe functions as light and can be opened and closed as desired by means of a tap 14. The wall of the interior cylinder is provided with recesses 15, arranged at a suitable distance from the heart 8.

On the threaded extremity 5 of the housing is screwed a reduction 16, provided with a screw thread 17 allowing linking up with the water pipe 18 coming from the feed pump of the kettle.

Owing to this connection between the reducer and the housing 1, the reducer can be easily disassembled, allowing access to the cylinder 9 and the interior elements.

The cylindrical valve 19 is adjusted and glides with soft friction into the cylinder 9; this valve has, on an intermediate point between the two extremities, a partition 20 forming a chamber 21 on one extremity of the valve in the heart 10 of the interior cylinder, as well as a chamber 23 at the extremity of the valve opposite the water inlet. The valve moves below the recesses 15 and is generally held in its closed condition by a spring 28. In the accompanying drawing, the valve is provided with annular grooves 24, intended to maintain the segments 25. The internal extremity of the valve is bevelled as indicated with 26.

In the threaded opening 12 is screwed a ring 27, provided with a polygonal head 28 that allows it to be turned by means of a key. Opposite the valve 19, this

ring has a widened seat 29 against which the valve ends up. When the reducer 16 is removed from the housing 1 of the valve, the seat of the valve and the valve are freely accessible, and after unscrewing the ring 27, removal of the valve of the cylinder is simple with respect to repairs or adjustments.

The valve 19 moves towards the outside while passing the recesses 15 with every stroke of the pump, allowing the latter to press away the water through the recesses 15, the housing 1 and the pipe 4 in the steam kettle, while the valve immediately closes under the counter-pressure of the kettle, this closing movement of the valve being facilitated by the spring 28. Owing to the arrangement of the cylinder 9 in which the valve moves, the head of this latter is not under the pressure of the steam, and the valve is only subject to a circumferential pressure on the positions where it is uncovered by the recesses 15. It follows that the valve is balanced, very sensitive, it operates easily and without excess friction, and, finally it cannot hammer when the pump works at full speed.

ABSTRACT

The invention relates to a check valve comprising a housing, provided, on one side, with an inlet opening while the other extremity has a reduced diameter and is provided with screw thread. This housing has a heart provided with a cylinder which reaches into the housing and is closed at its exterior end, while the cylinder is open on the side of the water inlet and provided in its cylindrical wall with one or more recesses. In the interior of the cylinder, a cylindrical valve moves, the seat of which is formed by a ring fixed in a removable manner in the open end of the cylinder. On the reduced extremity which forms the inlet of the housing of the valve, a reducer coupling is fixed in a removable manner.